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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,146	12/10/2003	Takahiro Yagishita	246101US2	4802

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

HUNG, YUBIN

ART UNIT	PAPER NUMBER
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2624

NOTIFICATION DATE	DELIVERY MODE
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06/12/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/731,146

Applicant(s)

YAGISHITA ET AL.

Examiner

Yubin Hung

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 8, 11, 12, 14 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/10/03, 02/21/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "5b" and "5c" have both been used to designate the lower block inside the block of ref. 5 in Fig. 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because in Figs. 1-2C and 4 some letters are mingled with the lines. See 37 CFR 1.84(p)(3). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the

appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 8, 11, 12, 14 and 16 objected to because of the following informalities:
 - All instances of "compressed embedded data" should have been "decompressed embedded data" since they are the result of decompression

Appropriate correction is required.

[Note: As agreed to with applicant's representative Mr. Kevin McKinley on April 26, 2007 and May 18, 2007, claims 8, 11, 12, 14 and 16 are interpreted as per Appendix A.]

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geisler et al. (US 6,252,989) and Fan et al. (US 6,956,958).

6. Regarding claim 1, (and similarly claim 13, since the apparatus of claim 1 performs the method of claim 13), Geisler discloses an image processing apparatus [Fig. 1, computer labeled "Decode/Transmit" (should have 18 as reference numeral); Col. 2, lines 48-51; Col. 2, line 66-Col. 3, line 1; Col. 4, lines 30-37 (mode 2 coding)], comprising:

- a first converter that subjects an image data to a first conversion to thereby generate a first image data [Fig. 5, leftmost "Reduce"; Col. 4, lines 38-45. Note that the apparatus necessarily has to have such a first converter since otherwise the "reduce" operation cannot be carried out]
- a second converter that subjects the first image data to a second conversion to thereby generate a second image data [Fig. 5, leftmost "Expand"; Col. 4, lines 46-48. Note that the apparatus necessarily has to have such a second converter since otherwise the "expand" operation cannot be carried out]
- an arithmetic unit that conducts an arithmetic operation on the image data and the second image data to thereby generate a third image data [Fig. 5, leftmost "Difference"; Col. 4, lines 58-62. Note that the apparatus necessarily has to have such an arithmetic unit since otherwise the "Difference" operation cannot be carried out]

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- a compressor that compresses the third image data to thereby generate a compressed image data
[Col. 4, line 63-Col. 5, line 21. Note that the apparatus necessarily has to have such a compressor since otherwise the threshold/quantize/compress (together considered as compression) operation cannot be carried out]

Geisler further discloses transmitting the first image data [Fig. 5, top image of Level 2 (first image data) and Col. 5, lines 22-23 & 28-30; note that when there are only two levels, then the top image of level 2 is the final reduced image referred in line 29].

Fan further disclose embedding compressed image data in an image from which the compressed image data is derived. [Fig. 1, refs. 12 & 14 (generate compressed image data, i.e. compressed watermark, which is then embedded); Col. 2, lines 55-60 and Col. 2, line 65-Col. 3, lines 3. Note that the apparatus necessarily has to have such an embedding unit since otherwise the embedding operation cannot be carried out. Note further that in Geisler the compressed image data is derived (i.e., expanded, differenced and compressed) from the level 2 reduced image (i.e., the first image data), along with the original image. Since it is the first image that is transmitted (per the above analysis), it would have been obvious to one of ordinary skill in the art to embed the compressed image data in the first image data; otherwise the information in the compressed image data will not be available in the receiving end in order to reconstruct the image.]

Geisler and Fan are combinable because they both have aspects that are from the same field of endeavor of image coding.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Geisler with the teaching of Fan by embedding the compressed data in the first image data. The motivation would have been to be able to reconstruct an image with higher fidelity, as Fan indicates in column 1, lines 19-33. [Note that the first image data of Geisler is a lower-resolution (lower-fidelity) version of the original image. Fan's teaching supports the same correction (to obtain higher-fidelity version of the image) from print to print (of this lower-resolution image) or copy to copy.]

Therefore it would have been obvious to combine Fan with Geisler to obtain the invention as specified in claim 1.

7. Regarding claim 2, the combined invention of Geisler and Fan further discloses (with the first conversion) widening a spatial quantization by averaging to reduce [Geisler: Col. 4, lines 38-45] and (with the second conversion) narrowing by expanding [Geisler: Col. 4, lines 46-48].

8. Regarding claim 3, the combined invention of Geisler and Fan further discloses that the first conversion includes widening a color spatial quantization width, and the second conversion includes narrowing a color spatial quantization width [Geisler: Col. 4, lines 38-48; Col. 13, lines 26-33 (2x2 REDUCE); Col. 13, line 56-Col. 14, line 23 (2x2 EXPAND)]. Note that REDUCE (1st conversion) reduces the color variation by averaging and therefore widens the color spatial quantization width and EXPAND (2nd conversion)

achieves the opposite effect, i.e., it narrows the color spatial quantization width, by interpolation. For example, consider a 4x4 image with pixels a_{11} - a_{44} as laid out in Geisler's Fig. 15 (ignore the last column) having the same pixel color values as those of Fig. 3A of the instance application, then the reduced image (i.e., the first conversion result) will be the same as Fig. 3B of the instance application when Eq. 7 on Col. 13 of Geisler is applied. Clearly, the color spatial quantization has been widened. The narrowing can also be easily seen when applying the EXPAND operation as specified in Geisler in the passage cited above].

9. Regarding claim 4, the combined invention of Geisler and Fan further discloses that the first conversion includes widening a time quantization width, and the second conversion includes narrowing a time quantization width [Geisler: Col. 4, lines 38-48. Note that REDUCE (1st conversion) reduces the image in each dimension, i.e., it widens a time quantization width (since each pixel is sampled at a different time) and EXPAND (2nd conversion) performs the reverse operation, i.e., it narrows a time quantization width].

10. Regarding claim 5, the combined invention of Geisler and Fan further discloses embedding using electronic watermark technology [Fan: Fig. 1, ref. 14; Col. 2, lines 55-60 and Col. 2, line 65-Col. 3, lines 3].

11. Regarding claim 6, the combined invention of Geisler and Fan further discloses an outputting unit to output the compressed data-embedded first image data. [Geisler: Col. 5, lines 28-32. Note that per the analysis of claim 1, the first image data is embedded with compressed image data. Note that the apparatus necessarily has to have such a transmitting (i.e., outputting) unit since otherwise the transmission operation cannot be carried out. Additionally, the file format used for the compressed data-embedded first image data during its transmission is the predetermined format.].

12. Regarding claim 7, the combined invention of Geisler and Fan further discloses that the arithmetic operation includes subtracting the second image data from the image data [Geisler: Col. 4, lines 58-59].

13. Regarding claim 8, note that Geisler further disclose an apparatus [Fig. 1, the PC labeled "DISPLAY" (which should have been assigned a reference numeral 22); Fig. 2, "Decode and display" (which should have been labeled with reference numeral 40); Col. 2, lines 56-61] for receiving image file and process it for display. Fan further discloses the following:

- a converter that subjects an image data to a predetermined conversion to thereby generate a converted image data [Fig. 1, ref. 20; Col. 3, 14-16. Note that this step separates the embedded watermark and the original image (see lines 17-18, which indicates that the original image has been separated); the separation is considered the predetermined conversion (as well as watermark extraction) and the separated original image is considered the converted image data. Note further that it would have been obvious to carry out this step in the CPU of the apparatus (i.e., the PC) since it processes received image for display, i.e., the CPU serves as the converter]

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- an extractor that extracts embedded data, from the image data, that is data embedded in the image data
[Fig. 1, ref. 20; Col. 3, 14-16. Per the analysis above. Note that the CPU also serves as the extractor]
- a decompressor that decompresses the embedded data extracted to thereby generate a decompressed embedded data
[Fig. 1, ref. 21; Col. 3, 14-16. Note that the CPU also serves as the decompressor]
- an arithmetic unit that conducts an arithmetic operation on the converted image data and the decompressed embedded data
[Fig. 1, refs. 22-26; Col. 3, 17-34. Note that arithmetic operations are involved in these steps. Note further that the CPU also serves as the arithmetic unit]

14. Regarding claim 9, the combined invention of Geisler and Fan further discloses using watermark technology to extract the embedded data [Fan: Col. 3, lines 14-15].

15. Regarding claim 10, the combined invention of Geisler and Fan further discloses a receiving unit that receives the image as an image file in a predetermined format [Geisler: Fig. 1: the apparatus labeled "DISPLAY." Note that since it receives image from the communication channel, it necessarily has a receiving unit. Note further that the format the received data is in is the predetermined format].

16. Claim 14 is rejected since the apparatus of the combined invention of Geisler and Fan performs the method of claim 14 (per the analysis of claim 8), including image display.

17. Regarding claims 15 and 16, which are the corresponding medium/program claims of claims 13 and 14, respectively, note that Geisler further discloses implementing the method on a PC that typically containing at least one computer-

readable medium storing various application programs [Figs. 1 & 7; Col. 10, lines 20-46].

18. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geisler et al. (US 6,252,989) and Fan et al. (US 6,956,958) as applied to claims 1-10 and 13-16 above, and further in view of Terasaki (US 6,947,572).

19. Regarding claim 11, the combined invention of Geisler and Fan discloses all limitations of its parent, claim 8.

The combined invention of Geisler and Fan does not expressly disclose the following, which are taught by Terasaki:

- a embedding determiner that determines whether embedded data has been embedded in the image data
[Fig. 1, ref. 31b (embedding determiner); Col. 3, line 65-Col. 4, line 4]
- a selector that receives the converted image data, the output of the arithmetic unit, and results of a determination from the embedding determiner, and outputs the output of the arithmetic unit when the result of determination indicates that embedded data has been embedded in the image data, and outputs the converted image data when the result of determination indicates that embedded data has not been embedded in the image data
[Fig. 1, refs. 23a (low-resolution), 23b (high-resolution), 31 a (selector); Col. 3, line 49-Col. 4, line 11. Note that the low-resolution data corresponds to the converted image data, while the high-resolution data corresponds to the output of the arithmetic unit which comprises the original image (or a close reconstructed version of it). Note further that the selector 31a receives both the low- and the high-resolution data that are in the storage unit 34]

The combined invention of Geisler and Fan is combinable with Terasaki because they both have aspects that are from the same field of endeavor of watermark encoding.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the combined invention of Geisler and Fan with the teaching of Terasaki as recited above. The motivation would have been to support the selection of the correct version of image for different purposes, e.g., low-resolution version for display and high-resolution version for printing, as Terasaki indicates in Col. 3, lines 44-48.

Therefore it would have been obvious to combine Terasaki with Geisler and Fan to obtain the invention as specified in claim 11.

Conclusion and Contact Information

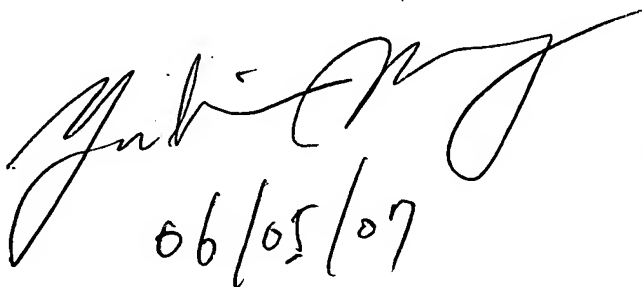
20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Richards (US 4,858,026) – See Fig. 1 and Col. 7, lines 1-28
- Ishikawa et al. (US 5,862,264) – See Figs. 1, 2, 6 and 7
- Bossut et al. (US 6,944,357) – discloses reducing color depth prior to compression [Col. 16, lines 1-4]
- Kono et al. (US 6,427,029) – discloses color interpolation after decompression [Fig. 2]

- Sugahara (US 6,909,784) – discloses a watermark detector, a decider and a switch for outputting different input [Fig. 2]

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

22. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



06/05/07

Yubin Hung
Patent Examiner
Art Unit 2624
June 5, 2007

Appendix A: Claim Interpretation

As agreed to with applicant's representative
Mr. Kevin M. McKinley
on 04/23/07 and 05/18/07

A.1 Claims 8, 11, 12, 14 and 16 are interpreted as follows:

8. An image processing apparatus, comprising:

a converter that subjects an image data to a predetermined conversion to thereby generate a converted image data;

an extractor that extracts embedded data, from the image data, that is data embedded in the image data;

a decompressor that decompresses the embedded data extracted to thereby generate a decompressed embedded data; and

an arithmetic unit that conducts an arithmetic operation on the converted image data and the decompressed embedded data.

11. The image processing apparatus according to claim 8, further comprising:

a embedding determiner that determines whether embedded data has been embedded in the image data; and

a selector that receives the converted image data, the ~~decompressed embedded data~~ output of the arithmetic unit, and results of a determination from the embedding determiner, and outputs, ~~based on results of an arithmetic operation on the converted image data~~, the output of the arithmetic unit ~~result of an arithmetic operation on the converted image data and the decompressed embedded data~~ when the result of determination indicates that embedded data has been embedded in the image data, and outputs the ~~compressed embedded~~ sum of converted image data when the result of determination indicates that embedded data has not been embedded in the image data.

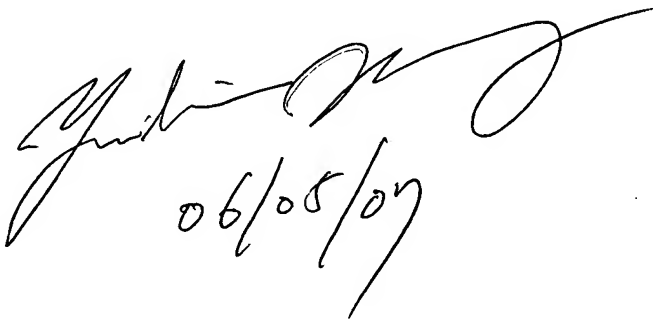
Claim 12, line 3: "compressed" interpreted as "decompressed"

Claim 14, line 9: "compressed" interpreted as "decompressed"

line 11: "the compressed" interpreted as "and the decompressed"

Claim 16, line 10: "compressed" interpreted as "decompressed"

line 12: "the compressed" interpreted as "and the decompressed"


06/05/07